What is the relationship between glycemic index or glycemic load and body weight?

Conclusion

Strong and consistent evidence shows that glycemic index and/or glycemic load are not associated with body weight and do not lead to greater weight loss or better weight maintenance.

Grade: Strong

Overall strength of the available supporting evidence: Strong; Moderate; Limited; Expert Opinion Only; Grade not assignable For additional information regarding how to interpret grades, click here.

Evidence Summary Overview

Current evidence shows that the glycemic index (GI) and glycemic load (GL) are not associated with body weight and do not lead to greater weight loss or better weight maintenance. Evidence from randomized controlled trials (RCTs) shows no difference between high-GI and low-GI diets on weight loss in studies longer than eight weeks. Evidence from fewer RCTs show the same for high glycemic load (GL) vs. low GL. The Committee reviewed 22 studies published since 2005. Of these, 13 were RCTs, two were prospective cohort studies and seven were cross-sectional studies.

Seven RCTs compared high vs. low glycemic index (GI) or high vs. low glycemic load (GL) in a reducing diet protocol. Of these, two studies (Abete, 2008; de Rougemont, 2007) showed a significant weight loss difference of 2.3kg and 0.8kg after eight and five weeks with a greater drop in the low-GI diet. The other five RCTs (Phillipou, 2009; Pittas, 2005; Raatz, 2005; Sichieri, 2007; Sloth, 20004) showed no difference in weight loss in much longer studies lasting from 16 to 76 weeks. Three RCTs (Ebbeling, 2007; Maki, 2007; Pereira, 2004) compared low-GL diets vs. low-fat diets. They did not show any differences in weight loss between the diets. One RCT (Pal, 2008) compared the effect of a high-GI vs. low-GI breakfast and found no difference in weight after three weeks. One RCT (McMillan-Price, 2006) compared four diets, two of which were high carbohydrate (CHO) and two were high protein (PRO) with either high or low GI. No difference in weight loss was found with any of the diets over 12 weeks. In summary, the RCTs overwhelmingly report no difference between low and high-GI diets in achieving weight loss during reducing diet programs or maintenance diet programs. The data on GL are less numerous but report similar results.

Two prospective cohort studies also examined this issue (Deienlein, 2008; Hare-Bruun, 2006). The first was a gestational diabetes study that found glycemic load (GL) not to be associated with gestational weight gain or weight gain ratio. The second followed normal weight participants for six years and showed no significant (NS) association between GL and change in weight in either men or women. It showed no association between glycemic index (GI) and change in weight in men, but did show an association of GI with lower weight gain in women. These studies suggest that in men there is no relation between either GI or GL and weight, and in women there is no relation of GL and weight, but a possible relation of GI and weight.

Seven cross-sectional studies also have been carried out, comprising a total of 21,231 participants, both children and adults. Of these, six (Hui, 2006; Lau, 2006; Liese, 2005; Mendez, 2009; Milton, 2007; Nielsen, 2005) showed no association between glycemic index (GI) or glycemic load (GL) and weight or body mass index (BMI). One study (Murakami, 2007) did show a positive correlation between GI and GL with BMI in young, lean Japanese women. These cross-sectional studies support the conclusion that GI or GL and weight are not associated.

Evidence Summary Paragraphs

Abete, 2008 (neutral quality), a randomized trial conducted in Spain, investigated the effects of two dietary energy-restricted approaches with similar macronutrient content, but different food distribution modifying the glycemic index (GI) on body weight and other metabolic markers. Participants were 32 obese (mean BMI = 32.5±4.3kg/m^2) adults (mean age = 36±7 years, 56% male) who were randomly assigned to higher- or lower-GI energy-restricted diets, both with 53% of energy as carbohydrate (CHO), 17% as protein (PRO) and 30% as fats. Participants were individually instructed to follow the prescribed dietary regime for eight consecutive weeks by a trained dietitian within a strict dietary framework, which was repeated on a three-day rotation basis. Subjects were asked to maintain the same habitual physical activity during the intervention. Body weight and BMI were significantly reduced in both groups, being greater in the lower-GI group. Percent change (SD) in body weight (kg) between baseline and eight-week follow-up for the higher- vs. lower-GI diets were -5.3 (2.6) and -7.5 (2.9), respectively (P-value for difference in percent change between groups = 0.033). Percent change (SD) in BMI (kg/m^2) between baseline and eight-week follow-up for the higher- vs. lower-GI diets were -5.4 (2.5) and -7.6 (3.0), respectively (P-value for difference in percent change between groups = 0.030). Both energy-restricted diets resulted in significant weight loss, but the diet with lower GI (84% of CHO from pasta and legumes) resulted in a greater weight loss.

Aston, 2008 (neutral quality), an RCT conducted in the United Kingdom, explored the effects of lower and higher glycemic index (GI) foods, independently of changes to other dietary factors on body weight and other outcomes in 19 overweight and obese female subjects (mean BMI=33.1±4.9kg/m^2, mean age = 51.9±7.6). This study included a randomized cross-over intervention with two consecutive 12-week periods. Subjects were provided with lower or higher GI versions of key 'staple' CHO-rich foods, according to intervention period, to incorporate into habitual diet. Provided foods included breads, breakfast cereals and rice, plus pasta on the lower GI diet and potatoes during the higher GI period. These 'low' and 'high' GI foods had a mean difference of 28.5 units. Subjects were instructed to maintain their habitual diets for the duration of the study, but to substitute the supplied foods into their diets on at least three occasions per day in the quantity they would normally consume. All subjects reduced dietary GI on the lower GI diet compared with the higher GI diet, with a mean difference of 8.4 units (P<0.001). Glycemic load was NS reduced on the low GI diet due to a small increase in CHO intake. Weight increased during both intervention periods, although weight gain did not differ between treatments. Mean (SD) change in body weight in the low- and high-GI treatments were 1.1 (1.5) kg and 1.4 (1.7) kg, respectively (P=0.7). The authors noted that participants were not attempting to lose weight during the trial, and the modest weight gain during both periods could be a function of receiving ‘free’ food.

de Rougemont, 2007 (positive quality), a randomized trial conducted in France, examined the effects of low and high glycemic index (GI) interventions on body weight, BMI and other parameters in overweight adults (53% male, BMI: mean±SEM = 27.3±0.2kg/m^2). Participants were randomized to a five-week intervention that consisted of ad libitum diets in which usual starch intake was replaced by either low- or high-GI starch. The subjects received individual guidance by a trained clinical dietitian during the pre-inclusion period, on day one and at the end of week three (day 21). Part of the starches were provided for both groups throughout the study. Subjects were asked to consume the same amount of starch as usual and change only the type of starch. They were also asked not to modify their usual dietary habits. The difference in mean GI between the low- and high-GI groups was significant after five weeks of treatment ($P<0.0001$). There was NS difference in glycemic load (GL) between the two groups after five weeks of intervention. After the five-week intervention, body weight and BMI were significantly decreased in the low-GI group [-1.1 (SEM, 0.3) kg, P=0.004 and -0.4 (SEM 0.1) kg/m^2, P=0.005, respectively], while NS changes were reported in the high-GI group [-0.2 (SEM, 0.2) kg, P=0.41 and -0.1 (SEM, 0.1) kg/m^2, P=0.39, respectively]. Differences between groups for body weight and BMI were significant (P=0.04 and P=0.03, respectively). The authors concluded that low-GI diets may be beneficial on body weight regulation.

Deierlein, 2008 (positive quality), a prospective cohort study in the US, examined whether total gestational weight gain or weight gain ratio (observed weight gain/expected weight gain) was associated with glycemic load (GL) in pregnant women from the third cohort of the Pregnancy, Infection, and Nutrition Study. Participants were 1,231 women carrying a singleton fetus (75% white, 64% were 25 to 34 years at conception). Using self-reported body weight prior to pregnancy to calculateBMI, 14.3% were underweight, 53.0% were normal weight, 10.2% were overweight and 22.5% were obese. Dietary intake was assessed at 26 to 29 weeks of gestation with a 100-item food-frequency questionnaire (FFQ) modified to include local foods. Body weight was measured near the time of delivery. Weight gain during pregnancy was inadequate in 13.6% of women, adequate in 22.2% and excessive in 64.2%. Glycemic load was not associated with total gestational weight gain or weight gain ratio.

Ebbeling, 2007 (positive quality), an RCT in the US, examined the impact of low-glycemic load (GL) (40% CHO and 35% fat) vs. low-fat (55% CHO and 20% fat) diets on weight loss among obese young adults (aged 18 to 35 years, 79% female, N=73). The interventions included a six-month intensive intervention period and 12-month follow-up period. There were 23 group workshops, one private counseling session and five motivational phone calls. Participants in the low-GL diet group were counseled to consume low-glycemic foods and limit high-glycemic foods. Participants in the low-fat diet group were counseled to consume low-fat grains, fruits and legumes and to limit intake of added fats, sweets and high-fat snacks. Dietary intake was assessed with telephone-administered 24-hour recalls and body weight was measured throughout the study period. A significant decrease in GL was observed in the low-GL diet group, and a significant decrease in total and saturated fat intake were observed for the low-fat diet group. Weight loss did not differ between diet groups for the full cohort of 73 participants (P=0.99). For those with a low insulin concentration at 30 minutes after a 75g dose of oral glucose, both diets produced similar results. However, for those with a high insulin concentration at 30 minutes, the low-GL diet was more effective for weight loss. For those with high insulin, the low-GL group lost weight more rapidly during the six months of intensive intervention (-1.0 vs. -0.4 kg per month; $P<0.001$) and achieved greater overall weight loss at 18 months (–5.8 vs. –1.2kg; P=0.004) compared with the low-fat group. In addition, there was no weight regain after six months for participants with high insulin who were assigned the low-GL diet. The authors concluded that variability in dietary weight loss trials may be partially explained by differences in hormonal response.

Hare-Bruun, 2006 (positive quality), a prospective cohort study in Denmark, investigated the relation between glycemic index (GI) and glycemic load (GL) on subsequent six-year changes in body weight in a subsample of 376 men (N=185) and women (N=191) from the Danish arm of the Monitoring Trends and Determinants in Cardiovascular Disease (MONICA) study. Participants completed a baseline health exam in 1982, a health exam and diet survey in 1987 to 1988 and a follow-up health exam in 1993 to 1994. Dietary intake was assessed with a diet history interview by a dietitian. No significant associations between GL and change in body weight were observed for men or women. No significant association between GI and change in body weight was observed for men. Among women, GI was positively associated with changes in body weight in adjusted analyses

(P<0.04). In six years, values per 10-unit increase in baseline GI increased by 2% (95% CI: 0.1, 4%) for body weight. In sedentary women, values per 10-unit increase in baseline GI rose by 6% (95% CI: 2, 9%; P=0.001) for body weight. The authors concluded that there may be sex differences in the associations between GI and body weight. In addition, physical activity may protect against diet-induced weight gain in women.

Hui, 2006 (neutral quality), a cross-sectional study in Hong Kong, investigated whether meal glycemic load (GL) was associated with childhood overweight. Participants were 316 children (6.7 0.3 years) identified by study methodology as overweight (N=121), middle-weight (N=130) and low-weight (N=65). Children were recruited in 2000 when they attended one of 12 Student Health Service Centers of the Department of Health. Weight and height were measured at the health centers. Three-day dietary records were completed prior to a home interview. Meal GL was the sum of the GLs of all food eaten in each meal (breakfast, lunch and dinner). Using adjusted logistic regression, meal GL was notNS associated with childhood overweight after adjusting for parental obesity, birth weight, sleeping duration, mean energy intake and paternal smoking. The authors concluded that meal GL was not an independent factor associated with childhood overweight in children aged six to seven years.

Lau, 2006 (neutral-quality), a cross-sectional study in Denmark, examined the associations between glycemic index (GI), glycemic load (GL) and BMI in 6,334 adults [mean (SD) age: 46.1 (7.8) years and BMI: 26.2 (4.6) kg/m^2] from the Inter99 study. A secondary purpose was to examine the effect of low energy reporters (LERs) on these relationships. Data was collected in 1999 and 2000 from participants of the Inter99 study who were eligible and agreed to participate. Dietary intake over the previous month was estimated with 198-item FFQ. Height and weight were measured. 24.7% of the study population were classified as LERs. In the univariate analyses of the entire population, GL was inversely associated with BMI (P<0.001). No association was observed for GI. After full adjustment including adjustment for energy intake, both GI and GL were positively associated with BMI (P=0.017 and P<0.001, respectively). When LERs were excluded, GL was positively associated with BMI in all analyses and GI was positively associated with BMI in the multiple analyses. The authors concluded that both GI and GL were positively associated with BMI when energy adjustment or LERs were considered.

Liese, 2005 (neutral quality), a cross-sectional study at four centers in the US, Canada and Germany, studied the association between glycemic index (GI) and glycemic load (GL) with BMI in 979 participants [54.9% female, mean (SD) age: 54.8 (8.5) years and BMI: 28.4 (5.6) kg/m^2] from the Insulin Resistance Atherosclerosis Study (1992 to 1994). Usual intake of diet was assessed by interview using a one-year, semi-quantitative, 114-item FFQ designed to include regional and ethnic food choices. Height and weight were measured. No association of GI with BMI was observed by linear regression analysis. Adjustment for relevant confounders including energy intake did not impact the results. Additional adjustment for fiber intake also had no impact on results. A significant, positive relationship between GL and BMI was observed. This association was present both in the crude models and after multivariate adjustment. Adjusting for total energy intake from non- CHO sources entirely explained the association. After additional adjustment for fiber intake, no association with BMI was observed. The authors concluded that GI was not associated with BMI. Although GL was positively associated with BMI, this association was explained entirely by confounding due to correlated energy intake.

Maki, 2007 (positive quality), an RCT in the US, examined the effects of an ad libitum reduced-glycemic load (GL) diet on body weight in 86 overweight and obese adults (67% female, mean age of 50 years, mean BMI approximately 32kg/m^2). Participants were randomly assigned to a reduced-GL diet or a low-fat, portion-controlled diet. The two-arm parallel design trial included a

12-week weight-loss phase followed by a weight-loss maintenance phase during weeks 24 to 36. The reduced GL diet group lost significantly more weight than the control group at week 12 (-4.9 and -2.5kg, respectively; P=0.002), but the two groups did not differ significantly at week 36 (-4.5 and -2.6kg, respectively; P=0.085). At week 12, 24 subjects (55%) in the reduced GL group and nine subjects (21%) in the control group had achieved a loss of 5% or more of body weight (P=0.002), but the two groups did not differ significantly at week 36 (45% and 29%, respectively; P=0.114). The authors concluded that a reduced GL diet is a reasonable alternative to a low-fat, portion-controlled diet for weight management.

McMillan-Price, 2006 (positive quality), a randomized trial in Australia, compared the effects of low-glycemic index (GI) and high-PRO diets on weight loss. Participants were 129 young adults (76% female, 18 to 40 years at baseline) with a BMI of 25kg/m^2 or more. Participants were stratified according to weight and sex and randomized to one of four diets for 12 weeks. Diets one and two were high CHO (55% of energy intake), with high- and low-GI, respectively; diets three and four were high PRO (25% of energy intake), with high- and low-GI, respectively. Glycemic load (GL) was highest in diet one and lowest in diet four. Analysis of food diaries indicated that all four groups achieved their intended CHO and PRO distributions and there was NS difference in energy intake between groups (P=0.41). The four groups lost a similar percentage of body weight (mean±SE percentage: diet one, −4.2%±0.6%; diet two, −5.5%±0.5%; diet three, −6.2%±0.4%; and diet four, −4.8%±0.7%; P=0.09). The findings were similar among those with high fasting insulin or triglyceride (TG) levels. There was a significant difference in the proportion of individuals who lost 5% or more of their initial body weight: 31% of subjects on diet one, 56% on diet two, 66% on diet three and 33% on diet 4 (P=0.01). The authors concluded that both high-PRO and low-GI patterns promote weight loss.

Mendez, 2009 (neutral quality), a cross-sectional study in Spain, examined the associations between glycemic index (GI) and glycemic load (GL) and BMI in a Mediterranean population. Participants were 7,670 adults (52% female, 35 to 74 years of age) who completed population-based cross-sectional surveys in 2000 and 2005. The same standard methods were used for both surveys. A self-administered, validated 165-item FFQ was used to estimate dietary intake. Height and weight were measured. Glycemic index was not associated with BMI in any model. To take into account interactions with under-reporting (interaction P<0.001 for both sexes), associations between BMI and GL were stratified by this variable. Among plausible reporters, multivariate-adjusted associations between BMI and dietary GL were null before adjusting for energy (P>0.05 for both sexes). After adjusting for energy, GL was associated with significant (P<0.05) declines in BMI. The adjusted mean difference in BMI between the highest and lowest GL tertile was -0.71 kg/m^2 (P<0.05) for women and -0.43kg/m^2 (P<0.10) for men. Among under-reporters, there was a positive relation between BMI and GL (P<0.002 for men, P=0.178 for women) in models excluding energy intakes. After adjusting for energy intakes, these associations were substantially attenuated, and associations with dietary GL became null or inverse. The authors concluded that their study does not support the hypothesis that high GI or GL is positively related to obesity; in contrast, in a Mediterranean food culture, a diet characterized by a higher GL may be associated with a lower BMI.

Milton, 2007 (neutral quality), a cross-sectional study in the United Kingdom, examined if low-dietary glycemic index (GI) was associated with lower body weight or BMI in 1,152 adults aged 65 years and older who were part of the National Diet and Nutrition Survey. A total of 50.5% of participants were males with mean (SD) age of 75.9 (7.0) years and BMI of 26.3 (3.6) kg/m^2. A total of 49.5% of participants were females with mean (SD) age of 77.6 (8.0) years and BMI of 26.6 (4.8) kg/m^2. Participants completed two four-day weighed dietary records. Body weight and height were measured by study personnel in the home of the participant. No significant relationships were observed for GI and body weight or BMI. The authors concluded that the study does not support advising the consumption of a low-GI diet to prevent weight gain in the elderly.

Murakami, 2007 (neutral quality), a cross-sectional study in Japan, examined the association between dietary glycemic index (GI) and glycemic load (GL) with BMI in Japanese women. Participants were freshman students (N=3,931) in dietetic course from 53 institutions in Japan who completed validated, self-administered, diet history questionnaires. Body weight and height were self-reported. Dietary GI and GL were independently positively correlated with BMI (20.8 and 21.2kg/m^2; P=0.03, and 20.5 and 21.5kg/m^2; P=0.0005, respectively) after controlling for potential confounders. The authors concluded that GI and GL were positively correlated with BMI in this study of relatively lean Japanese women aged 18 to 20 years.

Nielsen, 2005 (neutral quality), a cross-sectional study in Denmark, examined the associations between dietary glycemic index (GI) and glycemic load (GL) with BMI in 849 Danish children aged 10 (54% girls) and 16 (50% girls) years who were part of the European Youth Heart Study. Dietary intake were obtained through a 24-hour recall supported by a qualitative food record. Body weight and height were measured. Associations between energy-adjusted dietary GI or GL and BMI were NS among each group of age and gender.

Pal, 2008 (neutral quality), a randomized trial in Australia, investigated whether altering the glycemic index (GI) of one meal (breakfast) for 21 days in obese individuals would have a favorable effect on body weight and other outcomes. Participants were 21 overweight or obese adults (five men, 16 women) aged 25 to 65 years. A randomized cross-over trial with two three-week interventions separated by a three-week washout period was used. Breakfast meals of either low GI or high GI were provided to participants. Subjects consumed breakfast at 8:30 a.m. and usual lunch at 12:30 p.m. Subjects were instructed to maintain their habitual intakes for the other meals (ad libitum). Both breakfast meals provided the same energy, PRO, fat and CHO values within 6%. Total daily energy intake was not different between the groups (P=0.45). Body weight was similar at the end of the low and high-GI breakfast interventions (mean±SEM: 84.34±4.88kg vs. 84.25±4.43kg, respectively; P=0.614). This study found that modifying GI in a single meal (i.e., breakfast) alone did not impact body weight in overweight and obese adults.

Pereira, 2004 (positive quality), a randomized trial in the US, examined whether dietary glycemic load (GL) would influence rate of weight loss and other parameters during an energy-restricted diet program. Participants were 39 overweight or obese young adults aged 18 to 40 years who received an energy-restricted diet, either low-GL or low-fat. During a nine-day run-in period, all subjects were given a standard weight-maintaining diet and then were admitted to a metabolic unit for three days to obtain baseline measurements. At discharge, participants began diets, providing 60% of predicted energy requirements. After a 10% reduction in body weight during a six- to 10-week period, subjects were readmitted for five days to obtain final measurements of study end points. All food was prepared in a metabolic kitchen. Subjects were required to eat only the food provided and to consume one meal (lunch) onsite Monday through Friday. All other food was provided as take-home meals. Dietitians provided behavioral support daily. Weight loss and percent weight loss for the low-GL and low-fat diets were similar. Individual rates of weight loss were NS greater in the low-GL compared with the low-fat group [mean (SE): 1.09 (0.05) and 0.99 (0.05) kg per week, respectively; P=0.19].

Philippou, 2009 (neutral quality), a randomized trial in the United Kingdom, examined the effect of manipulating glycemic index (GI) on body weight maintenance following weight loss in 43 overweight adults. This study represents the second phase of a weight-loss study. The first phase included a weight-loss program. Participants who lost at least 5% of their initial body weight (median = 6.1%) were randomized to a four-month weight maintenance phase with a high- or low-glycemic diet. Participants in the high-glycemic group were asked to include at least one high-glycemic food with each of their meals and snacks. Similarly, participants in the low-glycemic group were asked to include at least one low-glycemic food with each of their meals and snacks. Subjects were encouraged to eat until satisfied and to follow healthy eating guidelines. Dietary composition differed only in GI (63.7±9.4 vs. 49.7±5.7, for high- and low-glycemic diets, respectively; $P<0.001$) and GL (136.8±56.3 vs. 89.7±27.5, for high- and low-glycemic diets, respectively; $P<0.001$). There was no difference in body weight change over four months between the high- and low-glycemic index groups (0.3±1.9kg vs. -0.7±2.9kg, respectively, $P=0.3$). The authors concluded that manipulating GI does not appear to significantly affect weight maintenance.

Pittas, 2006 (positive quality), a randomized trial in the US, examined whether two calorie-restricted diets that differ in glycemic load (GL) would have differential effects on weight loss. Participants were 32 overweight adults (78% female, predominantly white, mean age of 34.6 years, mean BMI of 27.5kg/m^2). After a seven-week baseline period, when usual energy requirements for weight stability were measured, subjects were randomized for 24 weeks to either a high-GL diet or a low-GL diet. Both diets provided 30% calorie restriction compared with individual baseline weight maintenance energy requirements. All food was provided during the six months by the research center. Subjects were expected to consume only this food; however, they were to report additional foods or drinks if they were eaten. Subjects attended regular behavioral group meetings and individual sessions with a dietitian. At three months and six months, both groups achieved statistically significant ($P<0.001$) weight loss compared with their baseline weight. Adjusted for baseline weight, weight loss was 7.2kg in the high-GL group vs. 7.7kg in the low-GL group at six months ($P=0.69$). Healthy overweight individuals lost similar weight during calorie-restricted diets of varying GL.

Raatz, 2005 (neutral quality), a randomized trial in the US, examined whether a hypocaloric diet with reduced glycemic load (GL) and glycemic index (GI) would result in greater sustained weight loss in 29 obese men and women. This study included a three-arm parallel-design randomized 12-week controlled feeding trial with a 24-week follow-up phase. Participants were randomized to one of three energy-restricted diets that varied in macronutrient content, GI and GL: high-GI diet, low-GI diet and high-fat diet. During weeks one to 12 (feeding phase), subjects consumed individualized energy-restricted diets to promote a weight loss of 0.70 kg per week. All meals were prepared in a metabolic kitchen. Subjects were required to consume all food provided and no foods other than those provided. During weeks 13 to 24 (free-living phase), diet assignment was maintained, but subjects prepared their own meals. Subjects were given intensive dietary instruction and had nutritional counseling every two weeks. Each diet group lost weight during the 12-week feeding phase ($P<0.001$), but the amount lost did not differ among the groups (mean±SEM: -9.3±1.3kg for the high-GI diet, -9.9±1.4kg for the low-GI diet, and -8.4±1.5kg for the high-fat diet). Weight loss achieved during the first 12 weeks were maintained in all three groups at week 36 and these values did not differ among the groups. The authors concluded that energy restriction over a 36-week period promotes weight loss in obese adults, irrespective of diet composition. A reduced GI and GL diet did not enhance weight loss relative to the other diets.

Sichieri, 2007 (neutral quality), a randomized trial in Brazil, investigated the long-term effect of a low glycemic index (GI) diet compared with that of a high-GI diet on weight change in 203 women aged 25 to 45 years with a BMI between 23 and 29.9kg/m^2. This study consisted of an 18-month randomized trial with a six-week run-in period. The run-in period, consisted of two weeks of a low-GI diet followed by four weeks of a high-GI diet. Those who completed the run-in period (203 of 414 recruited) were randomized to a low-GI diet or a high-GI diet. Dietary counseling was based on a small energy restriction (100 to 300kcal), and skipping the diet one day a week was permitted.

Subjects were instructed to eat three meals and three snacks according to a six-day menu plan. Nutritional counseling was provided monthly. Both diets were designed with 26% to 28% of energy as fat. For each meal, the low-GI diets were designed to maintain an average difference of 40 units compared with the high-GI diet. Sixty percent of participants completed the study. The difference in GI between the diets was approximately 35 to 40 units (40 compared with 79) during all 18 months of follow-up. The low-GI group had a slightly greater weight loss in the first two months of follow-up (-0.72 compared with -0.31kg), but after 12 months of follow-up, both groups began to regain weight. After 18 months, the weight change was NS different (P=0.93) between groups (-0.41 vs. -0.26kg for low- and high-GI diets, respectively). The authors concluded that their results do not support the hypothesis that a low-GI diet improves weight loss success.

Sloth, 2004 (positive quality), a randomized trial in Denmark, investigated the effects of a 10-week low-fat, high-CHO diet with either low-glycemic index (GI) or high-GI on body weight. Participants were 45 healthy, overweight women between 20 and 40 years of age. The 10-week parallel, randomized intervention trial consisted of two matched groups. Energy requirements were calculated and subjects were categorized and assigned to test food intakes of different levels. Groups received either low-GI or high-GI foods in replacement of their usual CHO-rich foods. Subjects were also instructed to eat a diet with 20% to 30% of energy from fat, and a list with other CHO-rich foods was given to participants so they could monitor the GI of the foods they ate during the study. Participants could eat ad libitum of their own diet in addition to the test foods. There was a significant decrease in energy intake over time, but there were NS differences between groups. Self-reported data from the food diaries indicated that subjects ate 95% of the amounts of test foods they were requested to eat. Body weight significantly decreased over time for both groups, but the differences were NS between the groups [mean (SEM): -1.9 (0.5) kg and -1.3 (0.3) kg for the low-and high-GI diets, respectively). The authors concluded that the study does not support the hypothesis that low-fat, low-GI diets are more beneficial than high-GI diets with regard to body weight regulation as evaluated over 10 weeks.

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Author, Year, Study Design, Class, Rating	**Population/Subjects**	**Methodology**	**Significant Outcomes**
Abete I, Parra D et al, 2008 Study Design: Randomized controlled trial Class: A Rating:	N=32 (14 female, 18 male). Mean (SD) age: 36 (seven) years. Mean (SD) BMI: 32.5 (4.3) kg/m^2. Location: Spain.	Eight-week randomized trial of two energy-restricted diets with higher or lower GI with obese participants. Subjects randomly assigned to high- or lower-GI energy-restricted diets, both with 53% of energy as CHO, 17% as PRO and 30% as fats.	Body weight and BMI were significantly ↓ in both groups (P<0.05), being greater in the lower-GI group. Percent Δ (SD) [eight-week follow-up vs. baseline] for the high and low-GI diet

		Participants individually instructed to follow prescribed dietary regime for eight consecutive weeks by a trained dietitian within a strict dietary framework; repeated on a three-day rotation basis. Subjects asked to maintain same habitual physical activity during intervention. Low-GI diet: 84% of CHO from pasta and legumes; GI of 40 to 45 units. High-GI diet: 84% of CHO from rice and potatoes; GI of 60 to 65 units. Weight loss monitored weekly by a dietitian; additional values obtained at baseline (day zero) and at endpoint (day 56). Three-day weighted food records for information about baseline intake and adherence to prescribed diet.	interventions. Weight (kg): -5.3 (2.6) and -7.5 (2.9) higher vs. lower GI diet, respectively (P-value for difference in %Δ between groups = 0.033) BMI (kg/m^2): -5.4 (2.5) and -7.6 (3.0) higher vs. lower GI diet, respectively (P-value for difference in %Δ between groups = 0.030).
Aston LM, Stokes CS et al, 2008 Study Design: Randomized controlled trial	N=19 women. Mean (SD) age: 51.9 (7.6) years (range 34 to 65). Mean (SD) BMI: 33.1 (4.9) kg/m^2.	Randomized cross-over intervention with two consecutive 12-week periods. Subjects provided with lower or higher GI	No difference in body weight between intervention periods. Weight ↑ during both intervention

Class: A Rating:	Location: United Kingdom.	versions of key 'staple' CHO-rich foods, according to intervention period, to incorporate into habitual diet. Provided foods included breads, breakfast cereals and rice, plus pasta on the lower GI diet and potatoes during the higher GI period. 'Low' and 'high' GI foods had mean difference of 28.5 units. Subjects instructed to maintain their habitual diets for duration of study, but to substitute supplied foods into their diets on at least three occasions per day in the quantity they would normally consume. Subjects kept four-day diet diaries at baseline and during final week of each intervention period	periods, although weight gain did not differ between treatments. Mean (SD) Δ in body weight in the low- and high-GI treatments were 1.1 (1.5)kg and 1.4 (1.7)kg, respectively (P=0.7). All subjects ↓ dietary GI on lower GI diet compared with higher GI diet, with mean difference of 8.4 units (P<0.001). GL was NS ↓ on the low-GI diet, due to a small ↑ in CHO intake.
de Rougemont A, Normand S et al, 2007 Study Design: Randomized Controlled Trial Class: A Rating:	N=38 (20 males, 18 females). Mean (SEM) age: 36.3 (2.0) years for low-GI group and 40.4 (2.2) years for high-GI group. Mean (SEM) BMI: 27.3 (0.2)kg/m^2. Location: France.	Five-week randomized, parallel two-arm trial. Five-week intervention consisted of ad libitum diets in which usual starch intake was replaced by either low- or high-GI starch. Subjects received individual guidance by a trained clinical dietitian during the pre-inclusion	After the five-week intervention, body weight and BMI significantly ↓ in the low-GI group (-1.1 (SEM 0.3) kg, P=0.004 and -0.4 (SEM 0.1) kg/m^2, P=0.005, respectively), while NS Δ were reported in the high-GI group (-0.2 (SEM 0.2) kg,

		period, on day one and at end of week three (day 21). Part of the starches were provided for both groups throughout the study. Subjects asked to consume same amount of starch as usual and Δ only the type of starch; Also asked not to modify their usual dietary habits. Low-GI diet: Included foods with GI <50 (relative to glucose). High-GI diet: Included foods with GI >70. Subjects instructed to record amount of food/beverages eaten each day using a five-day food diary during the pre-inclusion period (day 1 to day 7) and in weeks three (day 16 to day 20) and five (day 31 to day 35).	P=0.41 and -0.1 (SEM 0.1) kg/m^2, P=0.39, respectively). Differences between groups for body weight and BMI were significant (P=0.04 and P=0.03, respectively). NS differences in GI and GL between groups at baseline. After the five-week intervention, all subjects in the low-GI group reached the defined low-GI target with a significant ↓ in mean GI after five weeks of diet. In the high-GI group, the defined high-GI target was not reached. Difference in mean GI between the low- and high-GI groups was significant after five weeks of treatment (P<0.0001). GL ↓ in the low-GI group [-2•1 (SEM 0•6), P=0.002], but did not Δ in the high-GI group. NS difference in GL between the two groups after five weeks of

			intervention.
Deierlein AL, Siega-Riz AM et al, 2008 Study Design: Prospective cohort Class: B Rating:	N=1,231 women carrying a singleton fetus from the third cohort of the Pregnancy, Infection, and Nutrition Study. Age at conception: 16 to 24 years (18.6%), 25 to 29 years (28.8%), 30 to 34 years (35.6%), 35 to 47 years (17.0%). Pregravid BMI: 14.3% underweight, 53.0% normal weight, 10.2% overweight, 22.5% obese. Ethnicity: White (74.5%), black (16.2%), other (9.3%). Location: United States.	Participants recruited between January 1, 2001 through June 30, 2005. Dietary intake assessed at 26 to 29 weeks of gestation with a 100-item FFQ modified to include local foods. Body weight measured near the time of delivery and pre-pregnancy weight self-reported. Gestational weight gain: Difference between pregravid weight (self-reported) and weight measured near the time of delivery. Weight gain ratio: Observed total weight gain over expected total weight gain up until the last prenatal visit using weight gain recommendations from the 1990 Institute of Medicine report.	Weight gain during pregnancy was inadequate in 13.6% of women, adequate in 22.2% and excessive in 64.2%. GL was not associated with total gestational weight gain or weight gain ratio.
Ebbeling CB, Leidig MM et al, 2007 Study Design: Randomized controlled trial Class: A	N=73 (15 males, 58 females). Age: 18 to 35 years. Obese. Location: United States.	RCT with a six-month intensive intervention period and 12-month follow-up period. N=23 group workshops, one private counseling session and five motivational phone calls. Low-GL diet:	Weight loss did not differ between diet groups for the full cohort of 73 participants (P=0.99). For those with a low insulin concentration at 30 minutes after a 75g dose of oral

Rating:		Participants counseled to consume low-glycemic foods and limit high-glycemic foods. Target macronutrient composition: 40% of energy from CHO, 35% from fat and 25% from PRO. Low-fat diet: Participants counseled to consume low-fat grains, fruits and legumes and to limit intake of added fats, sweets and high-fat snacks. Target macronutrient composition: 55% of energy from CHO, 20% from fat and 25% from PRO. Diets prescribed using ad-libitum approach. Participants advised to acknowledge hunger and satiety cues. Physical activity recommendations based on public health guidelines. Three telephone-administered 24-hour recall interviews (two weekdays and one weekend day) conducted at baseline and six, 12 and 18	glucose, both diets produced similar results. However, for those with a high insulin concentration at 30 minutes, the low-GL diet was more effective for weight loss. For those with high insulin, the low-GL group lost weight more rapidly during the six months of intensive intervention (-1.0 vs. –0.4kg per month; P<0.001) and achieved greater overall weight loss at 18 months (-5.8 vs. -1.2kg; P=0.004) compared with the low-fat group. In addition, there was no weight regain after six months for participants with high insulin who were assigned the low-GL diet. Low-GL diet: GI and CHO intake ↓, resulting in a significant ↓ in GL [mean (SE), -19.8 [2.5] g per 1,000kcal; P<0.001]. Low-fat diet: Total fat intake ↓ [mean (SE), -10.8% (1.3%) of energy; P<0.001]

		months to assess diet. Body weight measured at baseline and weeks one, two, four, five, six, 10, 14, 17, 21 and 26; then every four weeks through week 74.	and saturated fat intake ↓ [mean (SE), -4.5% (0.6%) of energy; P<0.001].
Hare-Bruun H, Flint A et al, 2006 Study Design: Prospective Cohort Study Class: B Rating:	N=376 men (N=185) and women (N=191) from the Danish arm of the Monitoring Trends and Determinants in Cardiovascular Disease (MONICA) study. Age: 30 to 60 years at baseline. Location: Denmark.	Participants completed baseline health exam in 1982, health exam and diet survey in 1987 to 1988 and follow-up health exam in 1993 to 1994. Body weight measured by study personnel. Dietary intake assessed with a diet history interview by a dietitian. Average daily intake was based on intakes during the previous month.	NS associations between GL and Δ in body weight observed for men or women. NS association between GI and Δ in body weight observed for men. Among women, GI was positively associated with Δ in body weight in adjusted analyses (P<0.04). In six years, values per 10-unit ↑ in baseline GI ↑ by 2% (95% CI: 0.1, 4%) for body weight. In sedentary women, values per 10-unit ↑ in baseline GI ↑ by 6% (95% CI: 2, 9%; P=0.001) for body weight.
Hui LL and Nelson EA, 2006 Study Design: Case Control	N=316 children. Age: Mean (SD) 6.7 (0.3) years. Overweight (N=121), middle weight (N=130), low weight	Children recruited in 2000 when they attended one of 12 Student Health Service Centers of the Department of Health.	Using adjusted logistic regression, meal GL was NS associated with childhood overweight after

Study Class: C Rating:	(N=65). Location: Hong Kong.	Weight and height measured at the health centers. Three-day dietary records completed prior to home interview. Meal GL: The sum of the GLs of all food eaten in each meal (breakfast, lunch and dinner). Using data from a local cross-sectional growth survey, three weight groups were identified for study purposes: Overweight group (≥92nd percentile for BMI) Middle-weight group (45th to 55th percentile for BMI) Low-weight group (≤8th percentile for BMI).	adjusting for parental obesity, birth weight, sleeping duration, mean energy intake and paternal smoking. Adjusted ORs for overweight by meal GL for the highest vs. lowest tertile was 1.08 (95% CI: 0.52, 2.26; P=0.83).
Lau C, Toft U et al, 2006 Study Design: Cross-Sectional Study Class: D Rating:	N=6,334 men and women from the Danish population-based Inter99 study. Mean (SD) age: 46.1 (7.8) years. Mean (SD) BMI: 26.2 (4.6) kg/m^2. Location: Denmark.	Data collected in 1999 and 2000 from participants of the Inter99 study who were eligible and agreed to participate. Dietary intake over the previous month estimated with 198-item FFQ. Height and weight measured.	24.7% of study population were classified as low energy reporters (LERs) In the univariate analyses of entire population, GL was inversely associated with BMI (P<0.001). No association observed for GI. After full adjustment

			including adjustment for energy intake, both GI and GL were positively associated with BMI (P=0.017 and P<0.001, respectively). When LERs were excluded, GL was positively associated with BMI in all analyses and GI positively associated with BMI in the multiple analyses.
Liese A, Schulz M et al, 2005 Study Design: Cross-sectional study Class: D Rating:	N=979 adults (54.9% female) from the Insulin Resistance Atherosclerosis Study. Mean (SD) age: 54.8 (8.5) years. Mean (SD) BMI: 28.4 (5.6) kg/m^2. Ethnicity: 39.8% non-Hispanic white, 34.2% Hispanic and 26.0% African American. Location: United States, Germany, Canada.	Cross-sectional study of participants from the Insulin Resistance Atherosclerosis Study (1992 to 1994). Usual intake of diet assessed by interview using a one-year, semi-quantitative, 114-item FFQ designed to include regional and ethnic food choices. Height and weight were measured.	No association of GI with BMI was observed by linear regression analysis. Adjustment for relevant confounders including energy intake did not impact the results. Additional adjustment for fiber intake also had no impact on results. A significant, positive relationship between GL and BMI was observed. Association present, both in the crude models and after multivariate adjustment. Adjusting for total energy intake from

			non-CHO sources entirely explained the association. After additional adjustment for fiber intake, no association with BMI observed.
Maki KC, Rains TM et al, 2007 Study Design: Randomized Controlled Trial Class: A Rating:	N=86 adults (67% female). Mean age: 50 years. Mean BMI: ~32kg/m^2; 67% obese. 52% non-Hispanic white, 35% African American, 8% Hispanic, 5% other. Location: United States.	Two-arm (reduced-GL diet or low-fat, portion-controlled diet) parallel design randomized trial. 12-week weight-loss phase followed by weight-loss maintenance phase during weeks 24 to 36. Reduced GL group instructed to eat three meals a day until satisfied, maintaining a low-CHO intake during weeks zero to two and adding low-GI foods thereafter. Control subjects instructed to ↓ fat intake and ↓ portion sizes to produce a target energy deficit of 500 to 800kcal per day.	Reduced GL diet group lost significantly more weight than control group at week 12 (-4.9 and -2.5kg, respectively; P=0.002), but the two groups did not differ significantly at week 36 (-4.5 and -2.6kg, respectively; P=0.085). At week 12, 24 subjects (55%) in the reduced GL group and nine subjects (21%) in the control group had achieved a loss of ≥5% of body weight (P=0.002), but the two groups did not differ significantly at week 36 (45% and 29%, respectively; P=0.114).
McMillan-Price J, Petocz P et al, 2006 Study Design: Randomized Controlled Trial	N=129 (31 males, 98 females). Age: 18 to 40 years at baseline. BMI: ≥25kg/m^2 at baseline. Location: Australia.	Participants stratified according to weight and sex and randomized to one of four diets for 12 weeks. Participants were given	The four groups lost a similar percentage of body weight (mean±SE %: diet one, -4.2%±0.6%; diet two, -5.5%±0.5%; diet

Class: A Rating: ⊕			diet plans that were devised to aid weight loss and had similar daily caloric (1,400kcal for women; 1,900kcal for men), dairy, fat (30% total energy intake), type of fat consumed (saturated, unsaturated) and fiber (30g a day) intake. Participants given instructions regarding appropriate food choices within their plan. Participants met weekly with dietitians; Key CHO, PRO and some prepared foods were provided. Diet 1: High CHO (55% total energy intake), high-GL, average PRO (15% total energy). Diet 2: High CHO (55% total energy intake), low-GL, average PRO (15% total energy). Diet 3: High PRO (25% total energy intake based on lean red meats), high-GL based on whole grains, reduced CHO (45% total energy). Diet 4: High PRO (25% total energy intake), low-GL, reduced CHO (45% total energy). GL highest in diet one and lowest in diet four.	three, -6.2%±0.4%; and diet four, -4.8%±0.7%; P=0.09). Findings were similar among those with high fasting insulin levels [6µIU or more per ml (110pmol or more per L), N=37] or high fasting TG levels [133mg or more per dL (1.5mmol or more per L), N=38]. Significant difference in the proportion of individuals who lost ≥5% of initial body weight: 31% of subjects on diet one, 56% on diet two, 66% on diet three and 33% on diet four (P=0.01). Analysis of food diaries indicated that all four groups achieved their intended CHO and PRO distributions and there was NS difference in energy intake (P=0.41).

		Body weight measured weekly.	
Mendez MA, Covas MI et al, 2009 Study Design: Cross-Sectional Study Class: D Rating:	N=7,670 adults (52% female). Age: 35 to 74 years. Location: Spain.	Analysis of two population-based cross-sectional surveys collected in 2000 and 2005. Same standard methods were used for both surveys. Self-administered, validated 165-item FFQ used to estimate dietary intake. Height and weight measured.	GI not associated with BMI in any model. To take into account interactions with under-reporting (interaction P<0.001 for both sexes), associations between BMI and GL were stratified by this variable. Among plausible reporters, multivariate-adjusted associations between BMI and dietary GL were null before adjusting for energy (P>0.05 for both sexes). After adjusting for energy, GL was associated with significant (P<0.05) ↓ in BMI. Adjusted mean difference in BMI between the highest and lowest GL tertile was 0.71kg/m^2 (P<0.05) for women and -0.43kg/m^2 (P<0.10) for men. Among under-reporters, there was a positive relation between

			BMI and GL (P<0.002 for men, P=0.178 for women) in models excluding energy intakes. After adjusting for energy intakes, these associations were substantially attenuated and associations with dietary GL became null or inverse.
Milton JE, Briche B et al, 2007 Study Design: Cross-Sectional Study Class: D Rating:	N=1.152 (50.5% male). Mean (SD) age: Males, 75.9 (7.0) years; females,- 77.6 (8.0) years. Mean (SD) BMI: Males,- 26.3 (3.6) kg/m^2; females, 26.6 (4.8) kg/m^2. Location: United Kingdom.	Participants were part of the National Diet and Nutrition Survey, a cross-sectional survey that collected data on dietary habits and nutritional status. Two four-day weighed dietary records were completed. Height and weight measured by study personnel in participant's home.	NS relationships were observed for GI and body weight or BMI.
Murakami K, Sasaki S et al, 2007 Study Design: Cross-Sectional Study Class: D Rating:	N=3,931 females. Mean (SD) age: 18.1 (0.3) years. Mean (SD) BMI: 21.0 (2.8) kg/m^2. Location: Japan.	Freshman students in dietetic course from 53 institutions in Japan. Dietary intake assessed by validated, self-administered, diet history questionnaire. Body weight and height self-reported.	Dietary GI and GL were independently positively correlated with BMI after controlling for potential confounders. Lowest vs. highest quintile for GI: 20.8 and 21.2kg/m^2;

			P=0.03. Lowest vs. highest quintile for GL: 20.5 and 21.5kg/m^2; P=0.0005.
Nielsen BM, Bjornsbo KS et al, 2005 Study Design: Cross-Sectional Study Class: D Rating:	N=849 children aged 10 and 16 years from the European Youth Heart Study: • 10-year-old girls (N=262, median BMI=16.7kg/m^2) • 10-year-old boys (N=223, median BMI=16.7kg/m^2) • 16-year-old girls (N=183, median BMI=20.6kg/m^2) • 16-year-old boys (N=181, median BMI=20.5kg/m^2). Location: Denmark.	Dietary intake obtained through a 24-hour recall supported by a qualitative food record. Body weight and height measured.	Associations between energy-adjusted dietary GI or GL and BMI were NS among each group of age and gender.
Pal S, Lim S et al, 2008 Study Design: Randomized Controlled Trial Class: A Rating:	N=21 adults (five men, 16 women). Age: 25 to 65 years. Overweight or obese. Location: Australia.	Randomized cross-over trial with two three-week interventions separated by a three-week washout period. Interventions: Breakfast meals of either low-GI or high-GI were provided to participants. Subjects consumed a low- or high-GI breakfast at 8:30 a.m. and usual lunch at 12:30 p.m. Subjects instructed to maintain their habitual intakes for the other meals (ad libitum). Both breakfast meals	Total daily energy intake was not different between the groups (P=0.45). Body weight was similar at the end of the low- and high-GI breakfast interventions (mean±SEM: 84.34±4.88kg vs. 84.25±4.43kg, respectively; P=0.614).

		provided the same energy, PRO, fat and CHO values within 6%. Dietary intake monitored through the completion of three-day food diaries at the beginning (three days before baseline) and end of each intervention period (days 19 to 21). Anthropometric measures measured before and after each intervention period.	
Pereira MA, Swain J et al 2004 Study Design: Randomized Controlled Trial Class: A Rating:	N=39 adults. Gender: 77.3% and 76.5% female for low-glycemic and low-fat diet groups, respectively. Age: Mean (SD)=28.8 (6.3) and 32.6 (4.3) years for the low-glycemic and low-fat diet groups, respectively. Ethnicity: 59.1% white, 18.2% black, 4.5% other for low-glycemic group and 47% white, 29.4% black, 6.0% other for low-fat group. Location: United States.	Randomized trial, two-arm (low-GL or low-fat diet) parallel design. During nine-day run-in period, all subjects given a standard weight-maintaining diet and then were admitted to a metabolic unit for three days to obtain baseline measurements. At discharge, participants began diets, providing 60% of predicted energy requirements. After a 10% ↓ in body weight during a six- to 10-week period, subjects were readmitted for five days to obtain final measurements of study	Weight loss for the low-GL and low-fat diets were similar. Mean (SE): 9.6 (0.3) and 9.5 (0.3) kg, respectively; P=0.75. Weight loss % for the low-GL and low-fat diets were also similar. Mean (SE): 10.5% (0.3) and 10.5% (0.3), respectively; P=0.93. Individual rates of weight loss were NS greater in the low-GL compared with the low-fat group. Mean (SE): 1.09 (0.05) and 0.99 (0.05) kg per week,

		end points. All food prepared in a metabolic kitchen. Subjects required to eat only the food provided and consume one meal (lunch) onsite Monday through Friday. All other food provided as take-home meals. Dietitians provided behavioral support daily. Low-fat diet was low in fat, high in CHO and GL and satisfied recommendations for whole grains, fruits and vegetables and saturated fat and cholesterol. Low-glycemic diet designed to be as low in GL as possible, while providing enough CHO to prevent ketosis. GL was reduced by modifications of both the amount and type of CHO.	respectively; P=0.19.
Philippou E, Neary NM et al, 2008 Study Design: Randomized Controlled Trial Class: A	N=43 adults. Age: 18 to 65 years. BMI: 27 to 45kg/m^2. Location: United Kingdom.	Study represents the second phase of a weight-loss study. First phase included weight-loss program. Participants who lost ≥5% of their body weight (median = 6.1%) were randomized	No difference in body weight Δ over four months between the high- and low-GI groups (0.3±1.9kg vs. -0.7±2.9kg, respectively, P=0.3). Dietary composition

Rating:		to a four-month weight maintenance phase with a high- or low-glycemic diet for this phase of the study. Intervention: Participants asked to include at least one high glycemic or low glycemic food with each of their meals and snacks. Subjects encouraged to eat until satisfied and to follow healthy eating guidelines. Participants seen monthly for a dietetic assessment (semi-quantitative three-day diaries) and anthropometric measurements.	differed only in GI (63.7±9.4 vs. 49.7±5.7, for high- and low-glycemic diets, respectively; P<0.001) and GL (136.8±56.3 vs. 89.7±27.5, for high- and low-glycemic diets, respectively; P<0.001).
Pittas AG, Roberts SB et al, 2006 Study Design: Randomized Controlled Trial Class: A Rating:	N=32 adults (78% female). Mean age: 34.6 years. Predominantly white (more than 80%). Mean BMI: 27.5kg/m^2. Location: United States.	Randomized six-month two-arm parallel trial. After seven-week baseline period, when usual energy requirements for weight stability were measured, subjects randomized for 24 weeks to either a high-GL diet or a low-GL diet. Both diets provided 30% calorie restriction compared with individual baseline weight maintenance energy requirements. All food provided	At three months and six months, both groups achieved statistically significant (P<0.001) weight loss, compared with their baseline weight. Adjusted for baseline weight, weight loss was 7.2kg in the high-GL group vs. 7.7kg in the low-GL group at six months, P=0.69.

			during the six months by the research center. Subjects expected to consume only this food; however, they were to report additional foods or drinks if eaten. Subjects attended regular behavioral group meetings and individual sessions with a dietitian. High-GL diet: 60% CHO, 20% PRO, 20% fat, with mean estimated daily GI of 86 and a mean estimated daily GL of 116g per 1,000kcal. Low-GL diet: 40% CHO, 30% PRO, 30% fat, with a mean estimated daily GI of 53 and a mean estimated daily GL of 45g per 1,000kcal.	
Raatz SK, Torkelson CJ et al, 2005 Study Design: Randomized Controlled Trial Class: A Rating:	N=29 adults. Obese. Location: United States.		Three-arm parallel-design randomized 12-week controlled feeding trial with a 24-week follow-up phase. During weeks one to 12 (feeding phase), subjects consumed individualized energy-restricted diets to promote a weight loss of 0.70kg per week. All meals prepared in a	Each diet group lost weight during the 12-week feeding phase ($P<0.001$), but amount lost did not differ among the groups (mean±SEM: -9.3±1.3kg for high-GI diet, 9.9±1.4kg for low-GI diet and 8.4±1.5kg for the high-fat diet). Weight loss achieved during the

		metabolic kitchen. Subjects required to consume all food provided and no foods other than those provided. During weeks 13 to 24 (free-living phase), diet assignment maintained, but subjects prepared their own meals. Subjects given intensive dietary instruction and nutritional counseling every two weeks. The three hypocaloric diet arms varied in macronutrient content, GI and GL. High-GI diet: High-GL and GI [60% CHO, 15% PRO, 25% fat, GI = 63, GL = 272]. Low-GI diet: Low-GL and GI [60% CHO, 15% PRO, 25% fat, GI = 33, GL = 178]. High-fat diet: Low-GL and high-GI [45% CHO, 15% PRO, 40% fat, GI = 59, GL = 182]. Anthropomorphic measurements obtained at baseline and weeks four, eight, 12, 24 and 36. Five-day food records completed at	first 12 weeks were maintained in all three groups at week 36 and these values did not differ among the groups. Glycemic indices of the diets differed at week 24 (P=0.014), with low-GI diet group consuming a lower GI diet. By week 36, diets did not differ in GI.	

		week 24 and 36 during the free-living phase.	
Sichieri R, Moura AS et al, 2007 Study Design: Prospective Cohort Study Class: A Rating:	N=203 women. Mean (SD) age: 37.2 (5.4) years and 37.5 (5.6) years for low- and high-GI groups, respectively. Mean (SD) BMI: 26.9 (1.8) kg/m^2 and 26.7 (2.1) kg/m^2 for low- and high-GI groups, respectively. Ethnicity: Percent white, black and mulatto: 54.5%, 19.8% and 25.7% for low-GI group and 52.0%, 15.0% and 33.0% for high-GI group. Location: Brazil.	18-month randomized trial with a six-week run-in period. The initial phase, a six-week run-in period, consisted of two weeks of a low-GI diet followed by four weeks of a high-GI diet. Those who completed the run-in period (203 of 414 recruited) were randomized to a low-GI diet or a high-GI diet. Dietary counseling based on a small energy restriction (100 to 300kcal) and skipping the diet one day a week permitted. Subjects instructed to eat three meals and three snacks according to a six-day menu plan. Nutritional counseling provided monthly. Both diets designed with 26-28% of energy as fat. For each meal, low-GI diets were designed to maintain an average difference of 40 units compared with high-GI diet. FFQs completed at the beginning of the run-in	60% of participants completed the study. Difference in GI between the diets was ~35 to 40 units (40 compared with 79) during all 18 months of follow-up. Low-GI group had a slightly ↑ weight loss in the first two months of follow-up (-0.72 compared with -0.31kg), but after 12 months of follow-up both groups began to regain weight. After 18 months, weight Δ was NS different (P=0.93) between groups (-0.41 vs. -0.26kg for low- and high-GI diets, respectively).

		period and after 3, 6, 12 and 18 months of follow-up. Weight measured monthly.	
Sloth B, Krog-Mikkelsen I et al 2004 Study Design: Randomized Controlled Trial Class: A Rating:	N=45 women. Age: 20 to 40 years old. BMI: 27.6±0.2kg/m^2. Location: Denmark.	10-week parallel, randomized intervention trial with two matched groups. Energy requirements calculated and subjects categorized and assigned to test food intakes of different levels. Groups received either low-GI or high-GI foods in replacement of their usual CHO-rich foods. Subjects also instructed to eat a diet with 20% to 30% of energy from fat and a list with other CHO-rich foods given so they could monitor the GI of foods they ate during the study. Subjects instructed to have a ↓ sugar intake. Subjects could eat ad libitum of their own diet in addition to the test foods. They received individual guidance by trained clinical dietitians on the first day of the study period and at group meetings at weeks three, five,	Body weight significantly ↓ over time for both groups, but the differences were NS between the groups [mean (SEM): -1.9 (0.5) kg and -1.3 (0.3) kg for the low- and high-GI diets, respectively). Significant ↓ in energy intake over time, but NS differences between groups. Self-reported data from food diaries indicated that subjects ate 95% of the amounts of test foods they were requested to eat.

		seven and nine. Subjects completed a seven-day weighed dietary record just before entering the study and in weeks five and 10 of the intervention. Height and weight measured.	

Research Design and Implementation Rating Summary
For a summary of the Research Design and Implementation Rating results, click here.

Worksheets

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